UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

AMERICAN COUNCIL OF THE BLIND OF METROPOLITAN CHICAGO, ANN BRASH, MAUREEN HENEGHAN, and RAY CAMPBELL, on behalf of themselves and all others similarly situated,

Plaintiffs,

v.

CITY OF CHICAGO,

Defendant.

No. 19 C 6322

Judge Hunt

UNITED STATES OF AMERICA,

Plaintiff-Intervenor,

v.

CITY OF CHICAGO,

Defendant.

DECLARATION IN SUPPORT OF REMEDIAL PLAN

Linda Myers, Certified Orientation and Mobility Specialist
Mill Valley, California

Table of Contents

I. QUALIFICATIONS

I am Linda Myers, a Certified Orientation and Mobility Specialist recognized by the Academy for Certification of Vision Rehabilitation and Education Professionals. I have instructed people with vision disabilities for over 40 years. I have regularly participated in human-factors research and authored papers regarding accessibility to the built environment for pedestrians with disabilities since 1995.

After receiving a BA in education from UNC-Chapel Hill in 1975, I began my career as a rehabilitation teacher for adults who are deafblind at the Massachusetts Commission for the Blind (1976-1978). I then attended San Francisco State University to receive my Master of Arts in Special Education as well as my teaching credentials in both Orientation and Mobility ("O&M")[1] and as a teacher for persons who are Visually Impaired in 1979. Upon graduation, I worked as an O&M Specialist for over 17 years until 1996, with young adults at the Living Skills Center for the Visually Impaired in San Pablo, California, where my duties included consultation with local transit districts and cities regarding accessibility issues. I then worked as an O&M Specialist and teacher for students with visual impairments for the Marin County Office of Education from 1996 to 2021. Also from 1996-2011, I was a course lecturer and intern supervisor for the Special Education Department Orientation and Mobility Program at San Francisco State University. In February 2020, I also became a research associate with Accessible Design for the Blind, a company

[1] Orientation and Mobility (O&M) is a profession specific to blindness and low vision that teaches techniques for safe and efficient independent travel skills to people of all ages in all environments. "Orientation" refers to the ability to know where you are in relation to where you want to go, whether your destination is the next room or a friend's house in the next town. "Mobility" refers to the ability to move safely and independently from one place to another, which might include crossing streets and using public transportation.

committed to making travel safer for pedestrians with disabilities through research, consultation, education, and advocacy.

As an O&M Specialist, I evaluate and teach adaptive techniques to individuals with visual impairments that enable them to travel safely, confidently, and independently in both familiar and unfamiliar environments. This includes teaching orientation skills through the use of environmental features (*e.g.*, landmarks, sounds, slopes, etc.) and Global Positioning System (GPS) apps, as well as mobility skills using, variously, a human guide, long white cane, dog guide, and the use of any functional vision. Specific lessons might include sidewalk travel, street crossings, or the use of public transit.

My CV is attached as Exhibit A. Three projects of particular relevance to this case are:

1. From 2001-2007, I subcontracted to Accessible Design for the Blind on the National Cooperative Highway Research Program (NCHRP), Project No. 3-62. The objective of this research was to develop guidelines and training materials for the implementation of accessible pedestrian signals (APS). This project evaluated two research experiments and resulted in a 2007 final report with recommended guidelines for APS features and APS installation, as well as an APS prioritization tool.[2] This report is the most comprehensive source of information readily available online regarding how APS provide critical information to pedestrians who are vision disabled and under what circumstances APS should be installed.

2. Between August 2004 and May 2007, I consulted on the Technical Specifications of the San Francisco Accessible Pedestrian Signal Settlement Agreement, entered into in 2007. From May 2007 to June 2010, the City and County of San Francisco hired me as an APS consultant. I worked with the San Francisco Department of Public Works to decide which type of APS equipment would be used and advised the Department on installation issues related to the technical specifications.

3. I co-authored a 256-page curriculum guide written for O&M specialists and used in many university training programs, which includes relevant information about teaching street-crossing techniques to travelers who are blind.[3] The curriculum guide includes a chapter on understanding signalized intersections that addresses APS.

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[2] Harkey et al. (2007).

[3] Myers and Scheffers (2012).

II. SCOPE OF WORK

I have been retained by Disability Rights Advocates and Proskauer Rose, LLP, Plaintiffs' counsel for AMERICAN COUNCIL OF THE BLIND OF METROPOLITAN CHICAGO, ANN BRASH, MAUREEN HENEGHAN, and RAY CAMPBELL, on behalf of themselves and all others similarly situated, as well as by the UNITED STATES OF AMERICA, Plaintiff-Intervenor, to propose a plan to make Chicago's signalized intersections accessible enough for pedestrians who are blind, deafblind, and have low vision to safely and independently navigate city streets.

For my work on this matter, I am being compensated at an hourly rate of $200 per hour for reporting and consultation and $300 per hour for testimony at deposition or trial, plus reimbursement of expenses. I have no financial interest in the outcome of this matter.

III. METHODOLOGY

In preparing this report, I relied on my knowledge gained over more than 20 years of work on accessible pedestrian signals (APS), information gained from participation in street crossing research, publications I authored, a literature review of relevant APS research, and documents produced in this litigation regarding the City of Chicago, including those relating to APS in Chicago. In addition, I relied on information gained during my two inspections of Chicago's signalized intersections, in November 2021 and August 2023, including various complex intersections, potential APS sites identified in Chicago's APS pilot project, and intersections already equipped with APS. I also relied on interactions with the Chicago Lighthouse O&M Specialists and information from declarations and depositions taken in this case of residents with visual disabilities and Chicago officials. Finally, I relied on information I gained from interactions with other O&M Specialists in the field and with Colleen Wunderlich.

IV. CURRENT STATE OF INACCESSIBILITY

To create a remedial plan that would enable blind, deafblind, and low vision pedestrians to safely and equally access Chicago's intersections, it is important to first take stock of the current level of inaccessibility citywide. This was discussed in detail in my original report filed in this case, which I incorporate here. Dkt. 188-2 ("Myers Report").

Chicago has approximately 26,000 intersections. The City has installed traffic signals at about 2,800 of these intersections — those it has determined have either high traffic volumes or high pedestrian volumes. At each of these signalized intersections, the City has also installed visual pedestrian signals, which employ textual or pictorial "WALK/DON'T WALK" and/or countdown signals to communicate safe-crossing information to sighted pedestrians. The purpose of telling people when to cross streets with a pedestrian signal is to minimize conflicts between pedestrians and other users of the intersection and thereby secure an efficient and safe operating environment for roadway users.

An accessible pedestrian signal (APS) is the only device that can make signalized intersections accessible to blind and low vision pedestrians by communicating information about when and where it is safe to cross in an audible and vibrotactile manner. For almost two decades, Chicago has understood APS is a tool that makes signalized intersections easier and safer for blind pedestrians to travel. Since 2006, Chicago has committed to installing APS and has recognized APS as a "medium cost pedestrian safety tool" that allows blind pedestrians to access the many benefits of Chicago's signalized intersections and pedestrian network. Myers Report at 27, 30-31. Currently, however, Chicago has installed APS at only 40 intersections, or 1.4% of its total signalized intersections.

Chicago has no long-term plan to retrofit existing signalized intersections with APS beyond the 50 intersections included in its APS pilot program that began in 2019. The only other APS plan Chicago has is to install APS when the City fully modernizes or newly signalizes a signalized intersection, which may result in adding 15-25 APS per year. Based on Chicago's current APS installation plans, it will take the City over 100 years to install APS at all of its 2,800 signalized intersections. Myers Report at 31.

V. THE REMEDIAL PLAN

As discussed in my original report, blind pedestrians need Accessible Pedestrian Signals (APS) at Chicago's signalized intersections to safely and independently navigate sidewalks and intersections. Without APS, blind pedestrians rely primarily on audible cues to accomplish the four street-crossing tasks of (1) locating the corner and beginning of the crosswalk; (2) aligning to face the destination corner; (3) beginning to cross at a safe time; and (4) maintaining alignment through the crosswalk. Listening to traffic patterns to accomplish these tasks is unreliable and often causes pedestrians with visual disabilities to veer outside the crosswalk, start crossing too early and step into oncoming traffic, or start too late and get caught in the street after perpendicular traffic begins moving. These listening strategies are even less reliable in a city like Chicago because of inconsistent traffic patterns, competing environmental sounds, quieter cars, unique signal timing changes like Leading Pedestrian Intervals (LPIs), protected turn lanes, and complex intersection designs. Myers Report at 8-15, 22-27.

An APS assists in each of the street-crossing tasks and is the only device that makes signalized intersections accessible to pedestrians with visual disabilities. APS helps a blind pedestrian to locate the correct crossing point, start within the crosswalk, maintain alignment during the crossing, and most importantly, alert the blind pedestrian when the "WALK" indicator

is illuminated, identifying the time at which it is safe and legal to begin crossing. Absent this important safety information provided by APS, pedestrians with visual disabilities are often guessing at when to cross and mistakenly begin crossing during the "DON'T WALK" interval between one-third and one-half of the time. Myers Report at 14-21.

Blind pedestrians experience at least six distinct types of harm when attempting to cross signalized intersections without APS. **First**, all signalized intersections without APS are less safe for blind pedestrians, due to the increased risk of being hit by moving vehicles. **Second**, because of these safety concerns, blind pedestrians experience fear, frustration, and anxiety when crossing the street without an APS. **Third**, lack of APS results in delayed travel time for blind pedestrians, as it often takes several signal cycles to determine the traffic patterns and when it is safe to cross, as well as additional time to re-route if they deem the intersection too unsafe to cross. **Fourth**, lack of APS often forces blind pedestrians to rely on sighted pedestrians for assistance to safely cross streets, which is intimidating, unsafe, causes additional delay, and deprives the blind pedestrian of independence. **Fifth**, blind pedestrians are often forced to rely on hired ride services for transportation rather than cross intersections without APS, which is expensive, causes delay, and deprives the pedestrian of independent and spontaneous pedestrian travel. **Finally**, lack of APS and the attendant anxiety, frustration, and fear of crossing unsafely causes some blind pedestrians to forego planned travel altogether, resulting in feelings of isolation and loneliness. These injuries and many specific examples are explained in detail in my original report. Myers Report at 27-29.

To remedy these harms and provide blind pedestrians with equal and full access to city intersections and sidewalks, Chicago must install APS at all of its signalized intersections (approximately 10% of Chicago's total street crossings). Anything less in scope will not eliminate

the harms they currently face, because pedestrians with visual disabilities will be forced to continually reroute on long detours around remaining inaccessible intersections, resulting in additional travel time, increased risk of injury and disorientation, excessive cognitive loads, and dangerous crossings.

This transition to APS at all of Chicago's signalized intersections should occur as soon as possible — and no longer than 10 years — to eliminate these ongoing and what will be increasing harms, as described below. To achieve this remediation, Chicago can pursue multiple, simultaneous efforts to move toward safer streets quickly and efficiently for all. First, as a matter of efficiency and cost savings, Chicago should take advantage of other construction that occurs near signalized intersections and install APS as part of that construction. Second, since the duration of the remediation of existing signals may be as long as 10 years, Chicago should prioritize the most dangerous and important intersections for the blind community earlier in the transition period. Finally, to ensure this remedial plan is successful and timely, Chicago must implement new policies that (1) provide ample resources to procure funding and staff to design, install, and maintain compliant APS; and (2) to disseminate accurate and timely public information about the APS program.

A. Scope of Remedial Plan

In considering a proper remedy to correct Chicago's widespread failure to make signalized intersections accessible, the first consideration is the scope of the remedy needed to ensure blind pedestrians have safe and equal access to Chicago's sidewalks and intersections. To accomplish this, Chicago must make all its signalized intersections accessible. Anything less will not provide equal access and will not eliminate the injuries blind pedestrians currently face trying to cross inaccessible intersections. This opinion is based both on my personal expertise and decades of experience in this field as well as the opinions of orientation and mobility experts in the field with

whom I have consulted. The field is uniformly in agreement that all signalized intersections must be made accessible for a blind pedestrian to safely and independently navigate street crossings.

1. Blind Pedestrians Cannot Safely and Independently Navigate Chicago's Streets Without APS at all Signalized Intersections.

The numerous harms that blind pedestrians currently experience when trying to navigate inaccessible Chicago intersections will persist unless and until Chicago installs APS at all signalized intersections. As such, the failure to install APS at all signalized intersections in Chicago will deny pedestrians with visual disabilities both safe and equal access to city streets and sidewalks.

In determining the level of APS installation necessary for blind pedestrians to achieve safe access to Chicago's signalized intersections and pedestrian grid, it is important to remember that, like all pedestrians, individuals who are blind and low vision travel to all areas of Chicago for all reasons. Just like sighted individuals, pedestrians with visual disabilities use the pedestrian grid for travel to work, shop, visit friends, attend medical appointments and social activities, and simply to stroll. They do not travel only to locations near their homes, nor are they oriented to every route or to every location where they need to go. They engage in spontaneous travel. Therefore, installing APS in some neighborhoods but not others would be inadequate because it will deny blind pedestrians access to those neighborhoods without APS. And as I explain below, even if Chicago installs APS sporadically in all neighborhoods (such as every other intersection), this will still not provide safe and equal access because it will force blind pedestrians to take indirect, often zigzag routes, which not only delays travel, but makes it longer, more dangerous, and brings an increased risk of disorientation and cognitive overload.

i. Installing APS at Only a Subset of Signalized Intersections Would Result in Lengthy, Indirect Routes.

Installing APS at only a subset of intersections will make it extremely difficult for blind pedestrians to travel because they would need to spontaneously reroute themselves in the moment every time they encounter an inaccessible intersection. A sighted pedestrian who approaches an impassable intersection due to construction can visually scan the area and make snap decisions about the new, indirect route to take. But for pedestrians with visual disabilities who cannot rely on visual cues, it is not nearly as easy to reroute around inaccessible intersections. The blind pedestrian must first take time to determine whether the intersection has an APS and is thus accessible. After discovering it does not, he must decide whether to risk crossing anyway—perhaps guessing the WALK signal incorrectly and stepping into oncoming traffic. Assuming the pedestrian does not want to take that risk, he must make a random decision about which alternate direction may have APS and will lead him to his destination. Only after reaching this randomly selected intersection will he learn whether it has an APS that allows for safe crossing or whether he must look elsewhere for an accessible intersection. By this point, the pedestrian may be unsure of both where his destination is and how one would get there from the improvised alternative route.

This cumbersome process of taking indirect routes to avoid inaccessible intersections must be repeated for each inaccessible intersection encountered – all while the blind pedestrian tries to keep track of his location and calculate how best to get back on track towards the intended destination. Therefore, taking such indirect routes not only extends travel time, but also requires blind pedestrians to walk additional distances, which increases fatigue and the risk of injury: longer routes increase the blind pedestrian's risk of colliding with other pedestrians, vendors, grates, poles, bus shelters, restaurant furniture, and bicycles on the sidewalks. This can be stressful, frustrating, and upsetting.

ii. Indirect Routes Lead to Disorientation and Getting Lost.

These indirect routes also increase the likelihood of becoming disoriented when frequently detouring around inaccessible intersections for two reasons. First, every time a blind pedestrian turns to face a new direction, he must mentally record which direction he is facing and then recalculate his direction and proximity relative to his destination. Not surprisingly, these additional turns needed for each reroute around an inaccessible intersection (typically four: left/right/right/left) tend to disorient blind pedestrians. When disoriented, blind pedestrians can lose track of the direction they are facing or the direction of their destination—essentially, getting lost. The disoriented pedestrian may not be able to re-orient without significant additional time asking for help from sighted pedestrians, attempting to use a phone or other navigational software, re-tracing steps to the most recently passed landmark, or guessing about a direction and walking until a new landmark is identified. This is why orientation and mobility instructors teach blind pedestrians that the most direct route with the *fewest turns* is usually the best.

Second, longer routes make it more likely that a blind pedestrian becomes distracted due to a collision with an obstacle or some loud noise. Each distraction increases the likelihood that the blind pedestrian forgets his location along this longer, more circuitous path. And unlike sighted pedestrians who might become distracted but quickly recover, blind pedestrians who become distracted cannot clarify their location or correct their route simply by looking at street signs and recognizable landmarks, but instead must rely on the coping strategies discussed above (asking strangers, retracing steps, using a phone, or guessing). There are numerous issues with smartphones, including that some older travelers are not skilled or comfortable with smartphones, and phones are not always charged and are often unreliable for walking directions. Retracing steps and guessing takes time and additional effort. Even assuming a stranger is nearby and willing to

assist a disoriented blind pedestrian, such reliance on strangers raises its own potential dangers and compromises the goal of independent travel.

I have seen such disorientation in my blind students, even among the most competent travelers when observing them travel direct routes with few turns. Just recently in August 2023, I observed Colleen Wunderlich, a very skilled blind pedestrian, who became disoriented on a straight path she was walking in Chicago because she stepped into a puddle of water. After stopping for a few minutes to remove and shake out her wet shoe, Ms. Wunderlich asked me what street she just crossed because she had lost track of her location. Such disorientation is common, even for experienced blind pedestrians walking direct and familiar routes but who lose focus. This disorientation will be even more frequent and problematic for blind pedestrians who must reroute along longer routes to avoid inaccessible intersections.

iii. Indirect Routes Increase Cognitive Load and Introduce Further Dangers.

Even if blind pedestrians can research and memorize an accessible but indirect route before embarking on their trip, this would not make the trip any less burdensome. It would still be a longer, slower, and indirect route, and therefore would present the same increased risk of injury and disorientation described above. Moreover, being forced to memorize longer, indirect routes to avoid inaccessible intersections results in increased cognitive loads, which cause additional confusion, poor decision-making, and a higher likelihood of choosing unsafe paths of travel.

Unlike sighted pedestrians who can travel along the pedestrian grid and through intersections visually scanning signals and street signs, often while multitasking in conversation or on their phone, blind and low vision pedestrians must constantly manage a heavy cognitive load in order to navigate busy urban streets and sidewalks. In addition to performing the four street-crossing tasks described above (locating the crossing point, aligning to cross, deciding when to

cross, and maintaining alignment), blind pedestrians must also (1) attend the movements of other pedestrians; (2) identify and avoid numerous sidewalk obstacles (such as vendors, grates, poles, street/restaurant furniture, and bus stops); (3) in many cases, use a cane or dog guide or cell phone, while holding a bag or purse; (4) identify the slope and crown of the street and gutter while crossing; and (5) keep track of their route and current location along that route (meaning, what streets they have passed, what direction they're facing, and how many more blocks to go).

Adding to this heavy cognitive load the requirement to research and memorize a longer, more circuitous route through a complicated maze of inaccessible intersections is an additional obstacle that proves distressing and deters blind pedestrians from walking through new and unfamiliar areas. This additional research and memorization is particularly difficult for older blind pedestrians. Finally, forcing blind pedestrians to research and memorize indirect accessible routes *before* they travel deprives them of the freedom of embarking on urgent trips or altering travel plans in the moment, such as spontaneously deciding to visit a friend while out shopping.

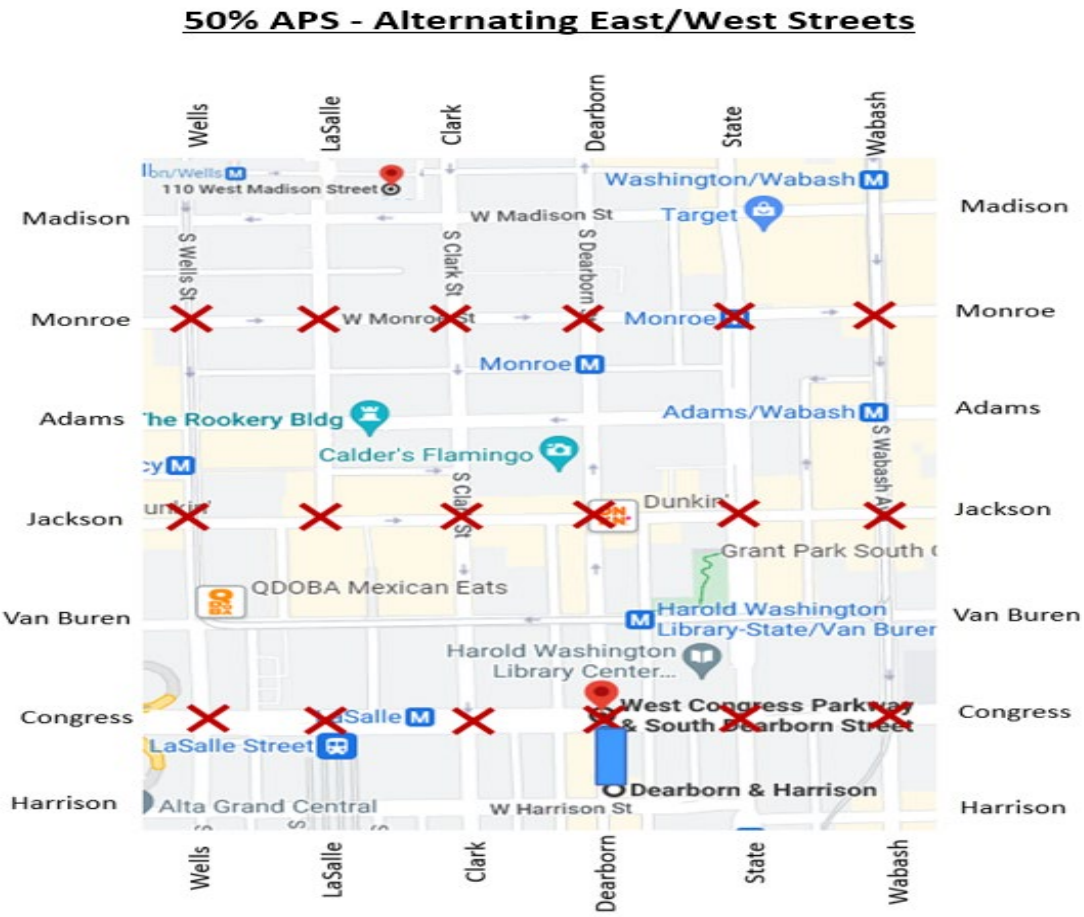
Given all these complexities and obstacles in navigating longer, indirect routes around a minefield of inaccessible intersections, it is highly likely that blind pedestrians will give up and simply choose to cross streets at more dangerous, inaccessible intersections that lack APS. This, of course, defeats the entire goal of making Chicago's network of signalized intersections and sidewalks safe and accessible. In other words, if traveling a pedestrian grid with only a subset of accessible intersections proves so cumbersome and challenging that pedestrians with visual disabilities opt to continue using inaccessible and more dangerous intersections rather than attempt to find those intersections that do have APS, this can hardly constitute safe and equal access. Thus, my opinion is that the only way to make Chicago's intersections and sidewalks safe and accessible is to install APS at all signalized intersections.

2. Partial Accessibility Creates Irrational and Unsafe Paths of Travel.

To illustrate these rerouting barriers resulting from installing APS at only a subset of signalized intersections, it is helpful to depict various installation scenarios on a map. The maps below all depict an area of the downtown Chicago loop, bounded by Washington Street on the north, Harrison on the south, Wabash on the east, and Wells on the west. I focus on a route frequently traveled by blind pedestrian Colleen Wunderlich, beginning at Harrison and Dearborn in the south loop and ending at St. Peters Church at 110 W. Madison, between Clark and LaSalle Streets. Similar routes could be replicated anywhere in the city, but I chose this area because I have observed Ms. Wunderlich travel it.

The first map below, **100% APS-Direct Route**, shows the most direct route with the fewest turns, which is how I instruct blind pedestrians to travel, assuming all intersections and blocks are equally accessible and safe. In this case, if all intersections were equipped with APS, the blind pedestrian walks north to Madison and turns left to arrive at the destination. This route includes one turn, covers 7.5 blocks, for a total of 0.624 mile, and 14 minutes of travel time.

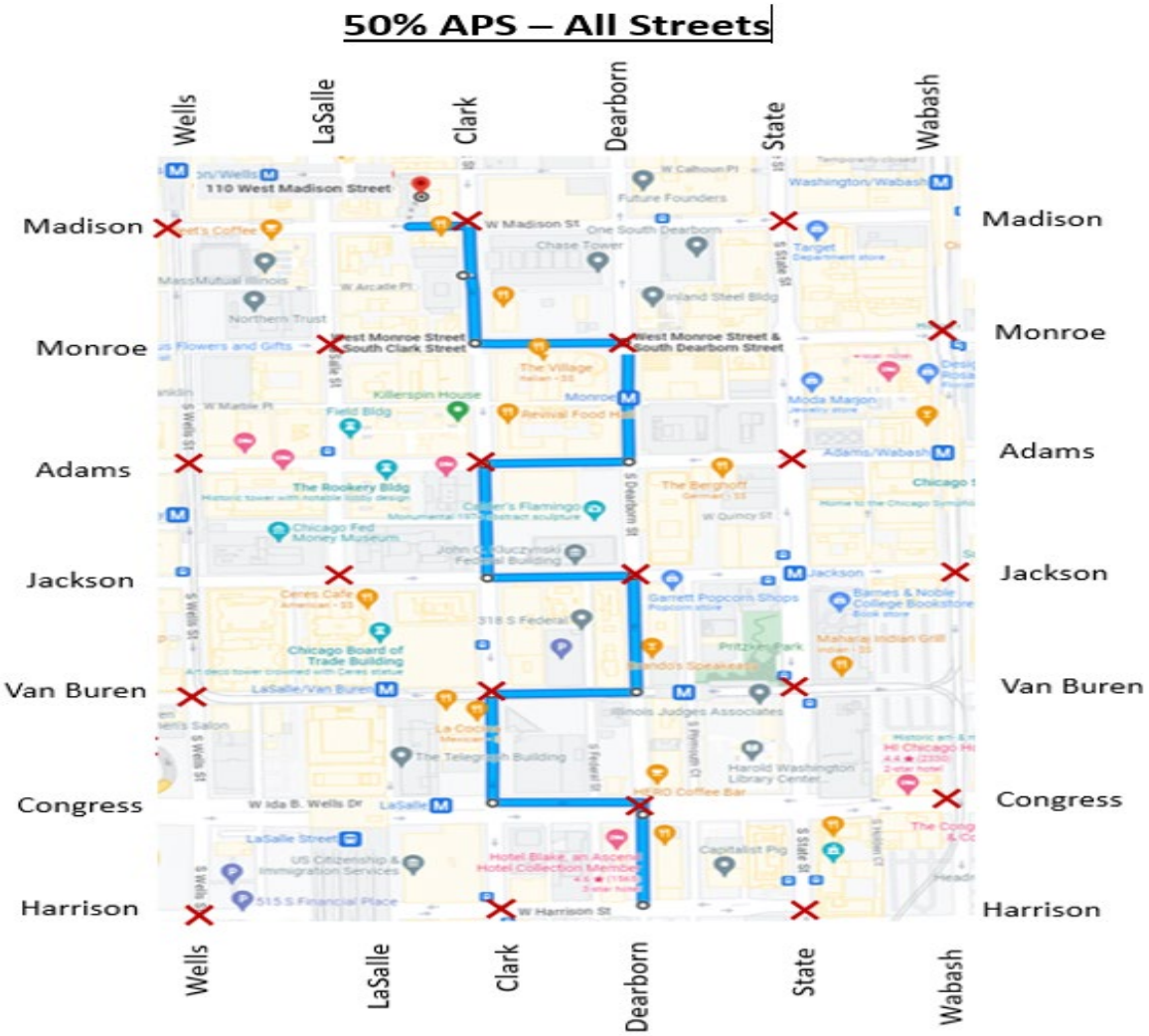
This next map below, **50% APS-Alternating East/West Streets**, shows APS installations at all intersections only on every other east-west street, beginning with Congress. A red X is placed at all inaccessible intersections that do not have APS. The route goes north only one block to Dearborn/Congress because the entirety of Congress is inaccessible, and there are no safe, accessible crossing intersections that allow a blind pedestrian to proceed north of Congress. This means the blind pedestrian—using only accessible intersections—will be trapped in channels bounded by inaccessible intersections. To reach the destination, the blind pedestrian would either need to risk crossing a dangerous, inaccessible intersection on Congress (as well as Jackson and Monroe) or use a non-pedestrian form of travel.



This next map below, **50% APS-All Streets**, shows installation design that avoids the channel-trapping problems described in the map above by installing APS on all streets but alternating every-other signalized intersection. This shows the blind pedestrian rerouting around every inaccessible intersection he encounters. Each reroute typically requires the pedestrian to walk two extra blocks, which means that on average, he walks twice the distance and will take at least twice as long to reach the destination. I say "at least" because the blind pedestrian will encounter additional delays by first stopping at each intersection and trying to determine whether it has APS. The pedestrian in this case will walk four extra blocks because of two inaccessible intersections, turning the 7.5-block walk into a 11.5 block route, for a total distance of nearly a

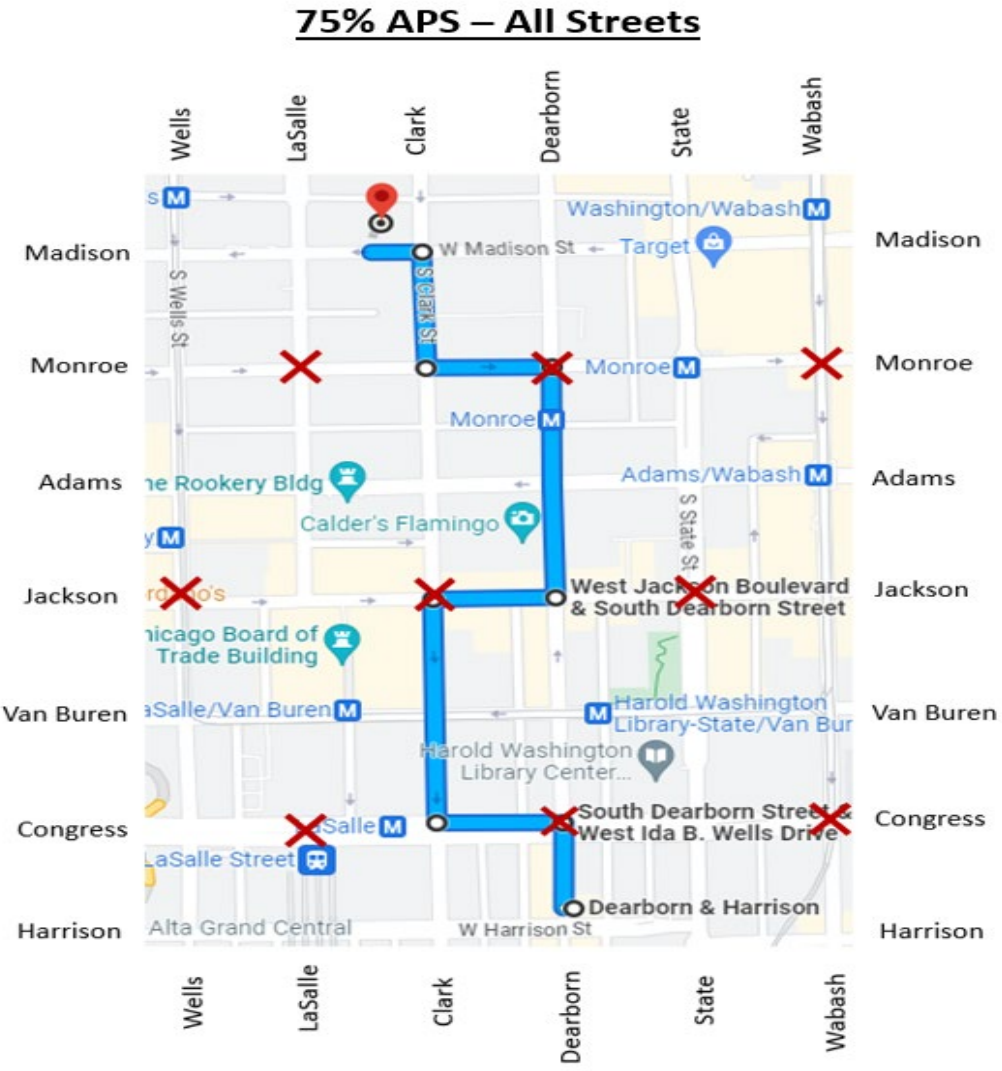
mile (0.908 miles) or almost double the accessible path, and 26 minutes of travel time (85.7% more time).

Every reroute also adds four additional turns, increasing the risk of disorientation. Although most *direct* routes contain 1-2 turns (regardless of distance), these turns increase exponentially when rerouting around inaccessible intersections. In this example, the turns increased from 1 to 11 because of the need to reroute around only two inaccessible intersections.



The final map below, **75% APS-All Streets**, shows APS installed at 75% of signalized intersections, with each city block having an inaccessible intersection at one of its four corners,

marked with a red X. Even for this relatively short route, the blind pedestrian must walk an additional two blocks and make an additional six turns to reach the destination. The additional blocks and turns continue increasing as the route becomes longer. So too does the delay in travel, as well as the risk of injury, disorientation, and cognitive overload. The total route becomes 0.759 miles, or an increase of more than 20% over the fully accessible route and 18 minutes of travel time (28.6% more time).



In sum, anything less than APS installation at 100% of Chicago's signalized intersections will force blind pedestrians to reroute frequently to avoid crossing dangerous, inaccessible

intersections. This is both unsafe and creates nontrivial barriers, since it will (1) lengthen travel time; (2) increase risk of injury due to longer travel distances, (3) increase risk of disorientation and getting lost; (4) increase risk of cognitive overload; and (5) ultimately, cause blind pedestrians to cross dangerous intersections without APS. Such limitations do not provide safe access to Chicago's signalized intersection and sidewalk programs. Nor do they provide *equivalent* access, since sighted pedestrians need not constantly reroute or memorize usable routes simply to safely use sidewalks and intersections. Indeed, Chicago even made sure that individuals with mobility disabilities can safely and independently travel anywhere along the pedestrian grid by installing curb cuts at all intersections (not just a fraction). So blind pedestrians' access to the pedestrian grid is not equal to that of sighted pedestrians or those with mobility disabilities.

3. APS at all Signalized Intersections is Best Practice.

I am not alone in my opinion that APS should be installed at all signalized intersections to ensure safe, equal, and independent access to city streets and sidewalks. I have spoken to the most well-known orientation and mobility experts in the country, and all agree that without APS at every signalized intersection, pedestrians with visual disabilities will be forced to take long, more circuitous routes, and risk becoming disoriented and/or crossing unsafely. They also all agree that universal APS installation with pedestrian signals is best practice.

For example, Janet Barlow, a leading expert in this area, submitted an expert report in the APS lawsuit against New York City in which she advocated for APS installation at all pedestrian signals in New York City for reasons similar to mine.[4] Her proposed remedial plan seeking full accessibility of all signalized intersections was adopted by that court in its remedy. Dr. Billie

[4] Ms. Barlow died in 2021.

Louise Bentzen, who has researched APS for over 30 years and published dozens of articles in this area, including the Accessible Pedestrian Signals Guide to Best Practices, also agrees that APS are needed at all signalized intersections. Dr. Bentzen is recognized as an international expert in APS and has noted that Australia has had a requirement and standardized features for APS at signalized intersections since 1976.

My opinion is also shared by two additional orientation and mobility training experts whom I consulted for this report: (1) Gene Bourquin, another expert in the APS litigation against New York City; and (2) Dona Sauerburger, a specialist with 50 years of experience teaching and publishing on street crossing techniques. Both of these experts specialize in pedestrian travel for individuals who are deafblind and emphasize that APS with vibrotactile and audible indications are needed at all signalized intersections to enable blind, low vision, and deafblind pedestrians to safely navigate city streets.

Finally, I consulted three additional orientation and mobility specialists who each have slightly different experience. Comprehensive APS installation at all signalized intersections is endorsed by Lukas Franck, a national expert on travel by blind pedestrians using dog guides who has worked on APS with traffic engineers in many cities. My opinion is also shared by Melanie Hughes, an orientation and mobility specialist in Virginia, who has consulted with the Virginia Department of Transportation for several years on APS installation. Another strong supporter for APS at all signalized intersections is Laura Park-Leach, an orientation and mobility specialist who worked for many years with the Charlotte Department of Transportation on issues related to the accessibility of public rights-of-way and transit for pedestrians with visual disabilities.

All of these experts, who teach, publish, and train in the area of pedestrian travel for individuals with visual disabilities, agree that APS are needed at all signalized intersections to

provide blind pedestrians with equal, independent, and safe use of city streets and sidewalks, and all agree that such universal APS installation is considered best practice for cities that have installed visual pedestrian signals at those intersections that need them.

B. Duration of Remedial Plan

The pace of remediation should be as fast as possible in order to stop the significant harm that blind and low vision pedestrians are experiencing every day due to Chicago's inaccessible pedestrian signals. These harms have continued for decades (Chicago first committed to installing APS in 2006). The City of Chicago's current pace of installation would not see a fully accessible pedestrian grid for more than 100 years. As a result, Chicago must take whatever steps are necessary to complete its APS transition plan as quickly as possible, and no later than within the next 10 years. This period of time is reasonable under the circumstances and in line with other large transition plans.

1. Harms to Blind and Low Vision Pedestrians are Significant and Increasing.

As explained above, the injuries and harms to blind pedestrians due to inaccessible intersections are significant and therefore require a speedy remedial plan. Blind pedestrians should not have to wait generations, as the City indicates it would take under its current APS installation pace, to be able to independently and safely travel pedestrian routes to the same degree as sighted pedestrians. Chicago should not ignore its accessibility obligations (and commitments) for decades and then take several more decades to remedy the problem.

Moreover, the injuries that blind pedestrians face from inaccessible signals will only worsen over time. Pedestrian fatalities across the country are rising, even in cities like Chicago that have adopted Vision Zero Plans. According to a 2023 report based on state government data,

pedestrian deaths increased nationally from 4,302 in 2010 to 7,624 in 2021, a 77 percent rise.[5] This increase in pedestrian accidents has been linked to several factors. First, there has been a rise in distracted drivers (vehicle screens, infotainment systems, cell phone use), which is exacerbated when blind pedestrians are involved.[6] Distracted drivers may not be paying attention when a blind pedestrian crosses against the light because he is unsure of when to cross—which can be significantly mitigated by the presence of APS providing the pedestrian certainty about when to cross.

Second, injuries to blind pedestrians from the lack of APS will continue to increase because of the proliferation of quiet cars. Quiet cars present safety issues in the absence of an APS because it becomes more difficult to hear traffic patterns that blind pedestrians rely upon to cross intersections. Gas-powered cars have become quieter, and the number of nearly silent electric cars has increased and will continue to grow.[7] Not only does the Manual on Uniform Traffic Control Devices (MUTCD) recognize this increase in quiet cars as an aggravating factor for safe crossing at signalized intersections,[8] but I have experienced this increase in hybrid and electric cars on the streets while teaching pedestrians with visual disabilities.

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[5] https://www.nytimes.com/2023/06/27/us/pedestrian-deaths-2022.html.

[6] https://www.forbes.com/advisor/legal/auto-accident/distracted-driving-statistics/#:~:text=Although%20cell%20phone%20use%20has,2012%20to%203.4%25%20in%202021.\

[7] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7558663/; https://www.iea.org/energy-system/transport/electric-vehicles

[8] MUTCD 4E.09(04) ("The factors that make crossing at a signalized location difficult for pedestrians who have visual disabilities include: **increasingly quiet cars**, right turn on red (which masks the beginning of the through phase), continuous right-turn movements, complex signal operations, traffic circles, and wide streets. Furthermore, low traffic volumes might make it

Finally, APS are needed more than ever because the cohort of elderly pedestrians, as a percentage of Chicago's overall population, is increasing.[9] As I know from my experience and research, the number of people with vision loss increases with an aging population.[10] And as people age, they are more likely to stop driving and instead rely on pedestrian travel. Many of these older adults may not be diagnosed as legally blind, but they may no longer be able to see the "WALK" indication on the pedestrian signal. They may also have hearing loss, making it harder to discern parallel vehicular surges. In fact, many of these aging pedestrians with declining vision and hearing have not had orientation and mobility training in techniques to navigate street crossings using traffic sounds rather than visual cues. The increasing aging population in particular needs access to the pedestrian signal information provided by APS—which is understandable for people with no O&M training—to make safe decisions about crossing signalized intersections.[11]

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difficult for pedestrians who have visual disabilities to discern signal phase changes."). See https://mutcd.fhwa.dot.gov/resources/state_info/illinois/il.htm.

[9] https://www.cmap.illinois.gov/onto2050/futures/communities/senior-population; https://www.census.gov/library/stories/2023/05/2020-census-united-states-older-population-grew.html; https://www.urban.org/policy-centers/cross-center-initiatives/program-retirement-policy/projects/data-warehouse/what-future-holds/us-population-aging.

[10] As noted by *Second Sense*, a Chicago agency serving individuals with vision loss, "Seniors are the largest growing group with new vision loss." https://www.second-sense.org/about/quick-facts/. Additional research data about aging trends shows that vision loss increases in aging populations. https://jamanetwork.com/journals/jamaophthalmology/article-abstract/2800246#:~:text=We%20estimate%20that%20more%20than,contrast%20sensitivity%20impairment%20by%20age (a 2023 study on national health and aging trends, *Population Prevalence of Vision Impairment in US Adults 71 and Older*, found that more than 1 in 4 US adults 71 years and older had vision impairments in 2021, which was higher than prior estimates.); https://www.afb.org/research-and-initiatives/aging/special-report-aging-vision-loss; https://generations.asaging.org/reality-aging-and-vision-loss-america.

[11] Recent research points out that the percussive tone indicating the WALK indicator is easily understood by sighted pedestrians. https://nitc.trec.pdx.edu/news/new-lidar-system-pinpoints-pedestrian-behavior-improve-efficiency-and-safety-

As an orientation and mobility specialist, I have recognized all three of these factors — distracted drivers, quieter cars, and an aging population — as contributing to increased danger for blind pedestrians, and I advise my students—particularly the older ones—to be even more careful during pedestrian travel. Rapidly installing APS at all signalized intersections that Chicago itself deems dangerous enough to warrant a visual pedestrian signal not only makes them accessible and therefore safer for blind pedestrians, but safer for sighted pedestrians as well.[12] A 10-year remedial period will thus assist Chicago in achieving its goal of reducing pedestrian injuries and fatalities.

2. A 10-Year Remedial Plan is Reasonable.

Chicago has never attempted a widespread APS installation program and will need to develop institutional commitment and investment to make such a program successful. Over the past 17 years, Chicago has only installed 40 APS, which is about two per year. Based on my experience with APS in San Francisco and other parts of California, and my knowledge of the progress of APS installation under the New York City remedial order, cities embarking on long-term construction projects typically start with an initial ramp-up period, during which they acquire expertise, develop procedures, and gather resources for APS installation, which thereafter allows them to proceed with the project at a faster pace than expected. Given that New York City has been ordered to install APS at almost 10,000 intersections in 10 years, it is reasonable to expect

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intersections#:~:text=New%20LiDAR%20System%20Pinpoints%20Pedestrian%20Behavior%20to%20Improve%20Efficiency%20and%20Safety%20at%20Intersections,-Posted%20on%20March&text=Pedestrian%20safety%20is%20critical%20to,behavior%20data%20using%20LiDAR%20sensors. This intuitive aspect of APS is important because pedestrians who are blind often don't have access to orientation and mobility instruction, so they too successfully are using APS without training.

[12] https://journals.sagepub.com/doi/10.1177/0145482X221150015.

that Chicago can install APS at less than one-third as many intersections within the same 10-year period or less.

Chicago can also learn from other large cities that are working rapidly towards installing APS at 100% of their signalized intersections. For example, New York City was ordered by a federal court in 2021 to install APS at 9,400 intersections over ten years, with the remaining intersections (approximately 4,000) over an additional five years. The court in that case set lower benchmarks for APS installation in the early years and increased annual benchmarks over time—ramping up from 400 APS per year to 1,000 per year. In the first year of that remedial order, New York City installed APS at 494 intersections, which is 94 more than mandated by the Court and 344 more than NYC was installing annually in 2019.[13]

New York City also provides an example of how cities can ramp up for large scale, long-term public works projects. New York City's Department of Transportation hosted an APS Industry Day in March 2023 that gathered a large cohort of prospective electrical contractors and engineering design firms from around the tri-state area and informed them of New York City's ambitious plan to rapidly increase the number of APS installations citywide. Main topics presented included the status of the current APS program, the court mandate, contracting processes and necessary contract changes to combine both design and construction work into one contract to streamline the contracting process. This was successful, and NYC was able to successfully bid out contracts representing a threefold or more increase of installation compared to the past, with additional numbers of installations ramping up in each year to come. Presumably, Chicago can

[13] *Am. Council of the Blind of New York, Inc. v. City of New York*, 579 F. Supp. 3d 539 (S.D.N.Y. 2021)*; First Ann. Rep. Indep. Monitor* at 2-3*, American Council of the Blind New York City v. City of New York,* 18 C 5792 (S.D.N.Y.), Dkt. 246.

undertake similar steps during the initial ramp-up phase that will lead to more robust and efficient installation progress.

Chicago needs to take its obligations seriously and tackle remediation with enthusiasm and ambition. That means a philosophical change about how it approaches APS, from a program that installs only a few APS per year to one that installs hundreds of APS per year. This rate of installation will improve even more if Chicago takes advantage of the efficiency of installing APS during any intersection construction work (as described below), and not just during a total signal modernization. The remedial plan should include reasonable installation benchmarks to ensure Chicago satisfies this 10-year timeline after an initial ramp-up period that allows Chicago to acquire the knowledge, resources, and procedures that will result in a much higher rate of APS installation in subsequent years.

C. Implementing The Remedial Plan

Chicago should adopt certain implementation policies and practices to ensure that this remedial plan successfully and timely corrects Chicago's longstanding and widespread failure to make its intersections and sidewalks accessible to individuals with vision disabilities. These policies will govern the order of APS installations, procedures for citizens to request APS, quality control measures to ensure that compliant APS are properly installed and maintained, and communication to the public about the APS transition plan.

1. Order of APS Installation

The transition to a fully accessible signalized intersection program will occur most efficiently if Chicago installs APS under three separate and parallel installation tracks. First, Chicago must install APS whenever it installs new pedestrian signals, as it has already committed to doing. Second, Chicago should install APS anytime it performs work that makes it more efficient to install APS (e.g., underground work at the intersection). Finally, for all existing signals

that are not retrofitted with APS in connection with other City intersection improvements, Chicago should prioritize installation at intersections that are more important or dangerous to pedestrians with visual disabilities.

i. APS with New and Altered Signals

The ADA requires Chicago to install APS at newly signalized and altered intersections. 28 C.F.R. § 35.151. Although the City committed in 2012 to installing APS with all *new* traffic signals, the record shows that this was not always done. The court here found that Chicago failed to install APS at almost 60 new signalized intersections in the past. The remedial order must require Chicago to install APS at all future signalized intersections that are newly created or fully modernized.

The remedial order should also direct the City to install APS when it makes improvements to signalized intersections that might constitute alterations. Although this court did not resolve the dispute about what type of work at signalized intersections constitutes an alteration, Chicago's remedial plan should require APS installation whenever the City undertakes other types of intersection construction because doing so typically saves time and money when it is already doing work in the area. Chicago agrees that it generally costs less to install APS while performing other intersection improvements than separately, at a later time. Chicago Statement of Facts, ¶¶ 51, 54-56 (Dkt. No. 183).

My review of APS policies in seven states and ten cities shows them to be consistent in intersection improvement projects where APS installation is *required* or *strongly considered*. [14]

[14] The seven states include Indiana, Maryland, Massachusetts, New York State, Texas, Virginia, and Washington State. The 10 cities or counties include Boston (MA), Chino (CA), Kirkland (WA), Medford (OR), Montgomery County (MD), Puyallup (WA), San Francisco (CA),

Most policies *require* APS be added (1) when replacing or relocating traffic signal poles; and (2) when upgrading or replacing signal heads, or controller cabinets.[15] Additionally, APS should be *strongly considered* for other modifications, such as (1) intersection sidewalk or curb cut replacement; and (2) other intersection work that requires digging underneath an intersection sidewalk or street, to take advantage of work already being done. These APS installation policies related to intersection improvements are considered best practice and should be included in the remedial plan.

With a mandate of 100% installation, Chicago will eventually install APS at these intersections at some point during this remedial plan anyway, so this would be an efficient and cost-effective practice.

ii. Prioritized APS Installation at Existing Signals

The bulk of the APS remedial plan will involve installing APS at existing pedestrian signals in the absence of other intersection construction projects. Given the length of this remedial plan, Chicago should prioritize installing APS in two ways.

First, Chicago should prioritize intersections that are most dangerous to the blind community. This includes all intersections with LPI (about 300) and those with protected turn phases (about 900). As explained in my original report, these two signal timing changes make signalized intersections significantly more dangerous for blind pedestrians because they make it

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San Jose (CA), Seattle (WA), and Sedro-Wooley (WA). Internet links to each APS policy are contained in Exhibit B, attached to this declaration.

[15] The National Traffic Signal Report Card estimates that signal controllers are replaced, on average, every 10 years. https://www.itskrs.its.dot.gov/its/benecost.nsf/ID/215f723db93d293c8525725f00786fd8

difficult to accurately determine when it is safe to start crossing. Myers Report at 24-27. Likewise, intersections with an exclusive pedestrian phase (EPP) as well as pedestrian crossings at mid-block and T-shaped intersections are also particularly dangerous for blind pedestrians since there is no parallel surge to indicate when it is safe to start crossing.[16] As such, Chicago should install APS at all of these "most dangerous" intersections within the first five years of the transition plan. Finally, to the extent Chicago converts an existing intersection to one with LPI, a protected turn phase, or an EPP *after* the remedial plan takes effect, the City shall install APS within one year of such conversion. During a transition plan that is aimed at making all signalized intersections safer for blind pedestrians, Chicago should not be making changes that make intersections more dangerous for blind pedestrians without concurrently installing APS.

Second, as for all other intersections that do not fall into the categories above, Chicago should prioritize APS installation consistent with factors contained in the APS Prioritization Tool developed by the National Cooperative Highway Research Program.[17] Although Chicago need not strictly apply the Prioritization Tool and individually rank each intersection for order of installation, it should consider these four factors in deciding the order of APS installation: (1)

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[16] As explained in my original report, in the absence of APS, blind pedestrians primarily rely on the sound of a near-lane parallel surge of vehicles (the sound of idling vehicles that begin to accelerate in the closest lane that go straight through the intersection parallel to the pedestrian's direction of travel upon) to determine when it is safe to begin crossing. Myers Report at 13-14. No such sound exists at an EPP, which allows pedestrians to cross simultaneously at all of the intersection crossings while vehicles are stopped on all approaches at the same time. Nor is there a parallel surge sound at pedestrian crossings located mid-block or at T-shaped intersections. This lack of a parallel surge sound is why these intersections without APS are particularly dangerous to blind pedestrians and must be prioritized for APS installation.

[17] The National Cooperative Highway Research Program (NCHRP) developed a Prioritization Tool as part of its Guidelines for Accessible Pedestrian Signals (Project 3-62). http://www.apsguide.org/appendix_d.cfm.

intersections near public transit facilities, near organizations serving people with visual disabilities and seniors, near city public facilities (medical facilities, parks, schools, and libraries), and near major pedestrian attractions (i.e., major shopping areas, major cultural venues, and educational campuses); (2) intersections with complex geometry or crosswalks that are long or include islands; (3) intersections with low off-peak traffic presence; and (4) intersections near the elevated "L" train tracks.[18] Specifically, Chicago should identify all intersections containing these factors and attempt to install APS at them as early as possible during the transition plan. The City will have discretion to determine the order of installation among intersections that fall into these three categories. Prioritizing these four groups of intersections rather than ranking individual intersections saves the City time and expense and provides the City with more discretion in implementing the remedial plan.

Finally, consistent with these two prioritization directives, Chicago must comply with two conditions that will apply throughout the transition period. First, Chicago must install APS at all intersections that are subject to an APS citizen request in accordance with the timelines set forth in the APS citizen request policy described below. Second, Chicago should make reasonable efforts to install APS equitably distributed across the city. Spreading out installation around the City will ensure that some neighborhoods do not remain without APS for years, thereby providing equity in improved access to all areas of the City.

[18] Chicago recognized most of these prioritization factors when it created its own APS Prioritization Tool for purposes of the APS Pilot Program. Chicago's Prioritization Tool is attached as Exhibit C.

2. APS Citizen Request Policy

As explained above, during this lengthy APS transition period, Chicago residents should be able to request that the City install APS at specific intersections, and these requests should be given the highest priority. It is my experience that individuals who are blind or who have low vision do not make frivolous or unreasonable requests for APS. Typically, if someone requests an APS, it is likely because they are attempting to cross at that intersection on a regular basis or several crossings on a needed route but cannot because it is inaccessible and dangerous. As a result, the City should adopt a specific APS citizen request policy that is part of this remedial plan.

Chicago claims to have operated an APS request system in the past, but the record shows it was nothing more than a decentralized request system run through the local alderman offices with no assurance when the requested APS will be installed, if at all. A clear, well-publicized policy with timelines for installation that is part of this remedial plan will ensure that citizens most in need of APS can receive them in a timely, efficient manner.

Citizens should be able to submit APS requests in several ways, including online, by telephone, and in person at aldermanic offices or the City's Department of Transportation. All requests should be received and administered by the official in Chicago's Department of Transportation responsible for implementing the remedial plan (as described below), who will be responsible for tracking and responding to these requests. All requests should be acknowledged within 30 days, along with instructions about next steps and a projected timeline for installation, which should be no later than six months from the request date. Total APS installations generated from citizen requests can be capped at a reasonable number per year, and any requests exceeding this cap should be placed at the top of the priority list by date of submission for the following year.

This APS citizen request policy should be well publicized. Chicago does not appear to track or solicit citizen requests from the public. Chicago's APS website does not provide an online

request form or even advise residents about whether and how they can request APS.[19] Chicago should update its website to fully describe all details of the new APS citizen request policy, including an updated list of all APS citizen requests submitted and the status of the request.

3. APS Installation and Maintenance

A comprehensive APS remedial plan is only effective if APS are properly installed and maintained. Based on my review of both older and newly-installed APS in Chicago, the City does not appear to be properly installing or maintaining the few APS it has. This is another problem that needs to be addressed in the remedial plan.

In the course of my work on this case, I inspected Chicago's APS on two occasions. During my first inspection in November 2021, I visited four intersections and found that none of the APS at these intersections was MUTCD-compliant. The first intersection was located at the corner closest to The Chicago Lighthouse for the Blind, at Roosevelt and Wood, where pedestrians who are blind and deafblind travel regularly and need a compliant APS. These APS were noncompliant because they used overhead speakers with a confusing cuckoo-chirp bird sound[20] and because several of the speakers were not working (even though it had been reported to the City on several occasions). The APS at the additional three intersections[21] were noncompliant because they did not use the repeating percussive tone required by MUTCD. Also, none emitted the proper audible street information when the pushbutton was held down for more than one second, which is

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[19] https://www.chicago.gov/city/en/depts/cdot/supp_info/aps.html

[20] The cuckoo-chirp bird sound is a two-sound system, where the "cuckoo" sound indicates the WALK interval for one street and the "chirp" sound indicates the WALK interval for the other street. These types of audible cues are decades old and not compliant with the MUTCD.

[21] The additional three intersections were (1) Roscoe and Lake Shore Drive; (2) Sheridan and Thorndale; and (3) Elston and Lieb.

extremely helpful to clarify location. One of the APS was not properly adjusted and was extremely loud (a problem that might frustrate surrounding neighbors), and another APS device emitted an incorrect audio message.

During my second inspection in August 2023, I evaluated four additional locations with newly-installed APS[22] and again found installation problems. I discovered volume problems at all four intersections that resulted from improper tuning during installation: the volume when responding to ambient sound was too loud and noncompliant with MUTCD, which requires that the sound being emitted be 15db above the ambient noise. I also discovered that at all four locations, the visual "WALK" indicator automatically illuminated but the APS percussive tone would not begin without the pedestrian leaving his initial location to go find the pushbutton and then returning to that location and realigning after pushing the APS button. The signals at these intersections were all pretimed, which means that both the visual "WALK" indicator and the APS percussive tone should engage automatically at the same time to provide equal access.

There were also two installation problems regarding improper placement of the APS. First, I found the mounting height of the pedestrian detectors (pushbuttons) varied and one APS was placed on the APS pole in a location that exceeded the MUTCD height requirements, meaning it would be difficult to reach for someone using a wheelchair or someone of short stature.[23] Second, I discovered an installation problem with the tactile arrow on the APS device at one location. As explained in my original report, the tactile arrow must align with the direction of travel on the

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[22] These recently-installed APS locations include: (1) South Morgan and West Roosevelt Road; (2) South Blue Island Avenue and West Roosevelt; (3) West Catalpa Avenue and Ashland Ave, and (4) West Bryn Mawr and North Clark Street.

[23] The MUTCD states that pedestrian detectors should be mounted approximately 3.5 feet but not higher than 4 feet above the sidewalk. MUTCD § 4E.08 (04)(F).

crosswalk and point at the destination corner that the APS controls, which assists in starting and maintaining alignment. At one APS located at South Blue Island Avenue and West Roosevelt, the arrow was incorrectly aimed towards the middle of the intersection rather than the destination corner, which could lead a blind pedestrian to veer out of the crosswalk and into traffic.

Based on my review of relevant documents, Chicago further appears to have no system of learning about such problems. There are no avenues to submit complaints about APS damage or malfunction, nor are there any routine City inspections that would alert the City to such problems. Additionally, there are no procedures or timelines regarding the correction of these APS problems, if the City were to learn about them.

The remedial plan should therefore direct Chicago to inspect and certify each APS that is installed, conduct regular inspections on an annual basis when inspecting signals, and develop a procedure that allows citizens to report APS damage or installation problems and a timeline for how these problems will be resolved. Chicago should correct APS maintenance problems as soon as possible by fixing the unit or, if not possible, replacing the unit and in no event longer than five business days from the date of the complaint. Chicago should repair APS maintenance problems as quickly as it repairs other traffic signal problems.

4. City Personnel Responsible to Implement Remedial Plan

Chicago has not devoted sufficient staffing for even its modest APS program. For the proposed remedial plan in this case to succeed, Chicago should designate an official from Chicago's Department of Transportation (CDOT) who has APS expertise and who will be responsible for implementing the remedial plan.

Cities that have embarked on large scale APS installation programs, like Portland, San Francisco, and New York City, typically dedicate a single, knowledgeable official within the transportation department who assumes responsibility for the success of the APS program.

Chicago has not done this. As the City's own expert in this case, Peter Koonce, points out, Chicago has failed to install more APS because the CDOT employees involved in Chicago's APS program don't know enough about APS, and there is no dedicated employee to take responsibility for the program's success. Koonce tr. at 164:8-166:2. Based on my review of this case, I agree with Mr. Koonce. However, the extremely modest goals of Chicago's APS program (vague and ever-changing commitments, scarce funding, and no real requirements or deadlines) perhaps help explain why CDOT has never taken responsibility over the APS program or bothered to develop the required APS experience needed for it to succeed.

To successfully implement the remedial plan in this case, the remedial order should direct Chicago to identify a single CDOT official who will have overall responsibility to implement the remedial order. This official must have knowledge and expertise regarding all aspects of APS and be responsible for overseeing the design, installation, and maintenance of all APS in Chicago in a timely manner. This official will supervise all in-house staff involved in implementing the remedial plan as well as all contractors used for the remedial plan. This CDOT official will also ensure that Chicago complies with all implementation directives set forth in the remedial plan in an effective and timely manner. Additionally, this official will be responsible for ensuring the department seeks all available funding needed to install APS as rapidly as possible.

Finally, CDOT should retain or contract with an orientation and mobility specialist throughout the remedial plan and regularly consult with this specialist about all aspects of APS installation for each intersection. Based on my experience as a consultant for San Francisco and my knowledge of other large APS installation projects, such a specialist is essential to ensure that APS are properly installed and maintained in compliance with the MUTCD technical standards and to educate city officials on why these standards benefit pedestrians with visual disabilities.

Other cities have likewise engaged orientation and mobility specialists in implementing large scale APS programs, including the program that the City's expert Peter Koonce worked on in Portland. Koonce tr. at 45, 48, 50, 59-60.

5. Public Communication Regarding APS

Accurate and timely information about the City's APS program and the remedial plan is critically important for blind pedestrians. This is true at all times, but particularly during the lengthy remedial period when APS are being installed.

Currently, the City provides very little information on its web page, and what it does provide is outdated. The City's web page lists only 26 intersections with APS (the City now claims 40 APS locations) and does not appear to have been updated for the last 19 months (since March 2022).[24] Moreover, it contains no information about (1) whether and how residents can request an APS or find out the status of any APS requests; (2) whether any installed APS are damaged or not functioning properly; or (3) who within the City to contact with questions or recommendations about the City's APS program.

The remedial order should direct the City to revamp its website as it relates to APS and to correct these problems. The City's website should contain all pertinent information about this remedial plan, including a copy of the remedial plan and a summary of its provisions. Second, it should contain current information about all APS, including (1) the location of current APS as well as intersections where APS are expected to be installed over the next year, and (2) locations with damaged or malfunctioning APS. The web page should also include pertinent information regarding the APS citizen request policy, including (1) how to submit such requests, (2) how and

[24] https://www.chicago.gov/city/en/depts/cdot/supp_info/aps.html

when such requests will be satisfied; and (3) tracking information about such requests. The website should include the identity and contact information for the CDOT official responsible for implementing the remedial plan as well as a designated staff person who can answer questions regarding APS. Finally, all of this information should be accurate and updated on a monthly basis, and the website should conform to all applicable web content accessibility guidelines so pedestrians with visual disabilities can access this valuable information.

Consistent with this directive that the City better communicate with the public about its APS program, Chicago should create and regularly communicate with an APS Citizen Advisory Committee. The purpose of the Advisory Committee is to provide an avenue for the blind community to provide input and feedback on CDOT's APS program, with a goal of continued outreach and collaboration between blind and low vision pedestrians and DOT. Such Committee should include representatives from CDOT (those responsible for implementing the remedial plan), from the Mayor's Office of People with Disabilities, and from Chicago's blind community, including organizations that serve the blind community. The Committee should meet quarterly and provide feedback to the City on all issues relating to the remedial plan The Advisory Committee will provide input and feedback on topics such as prioritization, APS features, installations, maintenance, and best practices, including compliance with the MUTCD.

I certify that, to the best of my knowledge and belief:

1. The statements of fact in this report are true and correct.

2. The reported analysis, opinions, and conclusions are limited only by the report assumptions and are my personal, unbiased, and professional analyses, opinions, and conclusions.

3. I have no personal interest or bias with respect to the parties involved.

4. My compensation is not contingent on an action or event resulting from the analyses, conclusions, or opinions of this report.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct, and that this Declaration was executed on November 6, 2023, in Mill Valley, California.

Linda Myers, COMS

Exhibit A

Linda Myers CV

LINDA ALEXANDER MYERS, MA
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Mill Valley, California 94941
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PROFESSIONAL EXPERIENCE

2020-present: Research Associate, Accessible Design for the Blind, Job duties: Participate in writing proposals, and doing human factor research.

1996-2021: Orientation and Mobility Specialist and Teacher of the Visually Impaired, Marin County Office of Education, 1111 Las Gallinas Avenue, San Rafael, California 94903. Job duties: Assessment of skills, goal setting and instruction to school age children who have visual impairments.

1979-Present: Orientation and Mobility Specialist, California Department of Rehabilitation, Blind Services, Job duties: Assessment of skills, goal setting and instruction to persons with visual impairments.

2011-Present: Orientation and Mobility Specialist, Group Home consultant. Job duties: Staff trainings and assessment of skills, goal setting and instruction to blind adults who are visually impaired or blind, hearing impaired with global delays.

1986-2011: Lecturer and Supervisor of Student Teachers, San Francisco State University, San Francisco, California. Job duties: Teaching various classes and supervision of student teachers in the Orientation and Mobility program of the Special Education Department.

1979-1996: Orientation and Mobility Specialist, Living Skills Center for the Visually Impaired, San Pablo, California. Job duties: Assessment of incoming skill level, one-on-one instruction of Orientation and Mobility techniques, instruction in financial management, supervision of student teachers, and consultation to local transit districts and cities regarding accessibility issues.

EDUCATION

Master of Arts, Special Education, San Francisco State University, San Francisco, California. May 1979.

Bachelor of Education, Early Childhood Education, University of North Carolina, Chapel Hill, North Carolina. July 1975.

CREDENTIALS

California Clear Specialist Instruction Teaching Credential in Special Education: Physically Handicapped

California Clear Multiple Subject Teaching Credential: General Subjects

California Clear Clinical or Rehabilitation Services Teaching Credential: Orientation and Mobility

Certified Orientation and Mobility Specialist (COMS) by Academy for Certification of Vision Rehabilitation and Education Professionals (ACVREP)

AWARDS AND COMMITTEES

2007: Pete Wurzburger Award of Lifetime Achievement

2005-2015: Regional Representative (Northern California, Washington and Oregon) of the Environmental Access Committee of the Orientation and Mobility Division of the Association for Education and Rehabilitation of the Blind and Visually Impaired

PROFESSIONAL AFFILIATIONS

Association for Education and Rehabilitation of the Blind and Visually Impaired (AERBVI), member, 1979-present

Environmental Access Committee, Orientation and Mobility Division of the Association for Education and Rehabilitation of the Blind and Visually Impaired (AERBVI) 2005-present

Institute of Transportation Engineers, member, 2021-present

PUBLICATIONS

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RECENT FUNDED PROJECTS

San Francisco Public Works, Detectable Separation between Sidewalk and Cycle Track Study, 2019

National Institute on Disability and Independent Living Rehabilitation Research, Department of Health and Human Services, Administration for Community Living, Grant #90IF0127-01-00 "Effect of Guidance Surfaces on Travelers with Vision and Mobility Impairments." Subcontract to Accessible Design for the Blind from Western Michigan University, 2016-19.

National Institute on Disability and Rehabilitation Research, "Fundamental Issues in Wayfinding Technology," Sub-contract to Accessible Design for the Blind from Smith-Kettlewell Eye Research Institute, 2006-2009.

National Cooperative Highway Research Program, Project No. 3-62, "Guidelines for Accessible Pedestrian Signals," Sub-contract to Accessible Design for the Blind from The University of North Carolina Highway Safety Research Center. 2001-2013.

National Easter Seal Society Research Program, "Infrared remote signage for the blind and print handicapped: Part II: A public transit accessibility study," Sub-contract to Accessible Design for the Blind from Smith-Kettlewell Eye Research Institute. 1994-1995.

Project ACTION, National Easter Seal Society, Federal Transit Administration, "Transit accessibility improvement through Talking Signs infrared remote signage: A demonstration and evaluation," Sub-contract to Accessible Design for the Blind from Smith-Kettlewell Eye Research Institute. 1994.

EXHIBIT B

Documents and Sources Consulted

1. All documents reviewed and sources consulted in preparation for my original expert report dated February 4, 2022 (Dkt. 188-2) and my rebuttal report dated May 23, 2022.
2. All authorities cited in this declaration.
3. All discovery produced in the remedial phase of this case.
4. Briefs and statements of fact in support of motions for summary judgment.
5. This court's March 31, 2023 decision granting summary judgment (Dkt. 248).
6. *Am. Council of the Blind of New York, Inc. v. City of New York*, 579 F. Supp. 3d 539, 547-8 (S.D.N.Y. 2021).
7. Independent Monitor's Report in A*merican Council of the Blind New York City v. City of New York*, 18 C 5792 (S.D.N.Y.), Dkt. 246.
8. Janet Barlow Proposed Remedial Plan, A*merican Council of the Blind New York City v. City of New York*, 18 C 5792 (S.D.N.Y.), Dkt. 143.
9. Gene Buorquin Proposed Declaration in Support of Remedial Plan, A*merican Council of the Blind New York City v. City of New York*, 18 C 5792 (S.D.N.Y.), Dkt. 167.
10. April 24, 2007 Release and Settlement Agreement in *Council for Disability Rights v. Chicago*, No. 05-C-5689, https://clearinghouse.net/doc/43738/
11. News Article regarding April 24, 2007, Release and Settlement Agreement in *Council for Disability Rights v. Chicago*, No. 05-C-5689, https://clearinghouse-umich-production.s3.amazonaws.com/media/doc/39502.pdf

Discussions regarding APS

Lukas Franck, Senior Consultant, The Seeing Eye, Morristown, NJ
Beezy Bentzen, Director of Research, Accessible Design for the Blind, Fairbanks, AK
Dona Sauerburger, COMS, Gambrills, MD
Gene Bourquin, COMS, New York, New York
Laura Park-Leach, St. Louis Society for the Blind, St. Louis, MO
Melanie Hughes, Department for the Blind and Visually Impaired, Fairfax, Virginia

APS Policies

States

Indiana
https://www.in.gov/indot/files/DBE_APSPolicy_2014.pdf

Maryland
https://www.roads.maryland.gov/OPR/APS_Installation_Policy.pdf

Massachusetts
https://www.mass.gov/doc/massdot-aps-policy/download

New York State
https://www.dot.ny.gov/divisions/operating/oom/transportation-systems/repository/TSMI-17-02.pdf

Texas
http://onlinemanuals.txdot.gov/txdotmanuals/tff/accessible_pedestrian_guide.htm#i1009850

Virginia
https://www.virginiadot.org/business/resources/IIM/TE-388_Accessible_Pedestrian_Signals_.pdf

Washington State
https://wsdot.com/publications/manuals/fulltext/M22-01/1510.pdf
(pages 1510-7, 1510-9)

Cities and Counties
Boston
https://www.boston.gov/sites/default/files/file/2020/09/04%20CHAPTER%204%20-%20INTERSECTIONS.pdf
(page 193)

Chino, CA
https://www.cityofchino.org/DocumentCenter/View/3183/Policy-on-Accessible-Pedestrian-Facilities-2022-Update-PDF?bidId=
(page 24)

Kirkland, WA
https://www.kirklandwa.gov/files/sharedassets/public/v/1/development-services/pdfs/pre-approved-plans/policy-r-31.pdf

Medford, OR
https://www.medfordoregon.gov/files/assets/public/v/1/public-works/engineering/documents/accessible-pedestrian-signals-policy2.pdf

Montgomery County, MD
https://www.montgomerycountymd.gov/DOT/ADA/accessible_pedestrian_signals.html

Puyallup, WA
https://www.cityofpuyallup.org/DocumentCenter/View/3920/Draft-Puyallup-ADA-Transition-Plan

San Francisco, CA
https://www.sfmta.com/getting-around/walk/accessible-pedestrian-signals

San Jose, CA
https://www.sanjoseca.gov/your-government/departments-offices/transportation/streets/signals/accessible-pedestrian-signals

Seattle, WA
http://www.seattle.gov/Documents/Departments/SDOT/Services/PolicyMemo_APS_Final.pdf

Sedro-Woolley, WA
https://cms5.revize.com/revize/sedrowoolley/Departments/Engineering/Policies%20&%20Publications/APS_Policy.pdf

EXHIBIT

C

The HNTB Companies
Engineers Architects Planners

One South Wacker Drive
Suite 900
Chicago, IL 60606

Telephone (312) 930-9119
Facsimile (312) 930-9063
www.hntb.com

Project Name
Accessible Pedestrian Signals
Project No. B-5-325

Date of Meeting
November 28, 2018

HNTB Project #
61512

Location
MOPD – Room 104

Purpose of Meeting
APS Pre Meeting

Time
1:00 – 2:00 pm

Meeting Agenda

1) Introductions
2) Progress to date
   a) Research MUTCD and PROWAG guidelines
   b) Development of prioritization tool (Intersection Worksheet)
   c) Classify locations per complexity
   d) Prioritization matrix by location
   e) GIS
   f) Prioritization by routes
   g) Preliminary cost estimates
   h) Research of APS vendors and draft tech memo
3) December 6th meeting
   a) Draft agenda
   b) Presentation materials and handouts
4) Other Items
5) Next Steps
   1) Incorporate suggestions for 12/6 meeting
   2) Finalize priority locations – December 2018
   3) Finalize tech memo – December 2018
   4) Send locations to OUC – January 2019
   5) Design – February 2019 thru August 2019

The HNTB Companies
Engineers Architects Planners

One South Wacker Drive
Suite 900
Chicago, IL 60606

Telephone (312) 930-9119
Facsimile (312) 930-9063
www.hntb.com

Project Name
Accessible Pedestrian Signals
Project No. B-5-325

Date of Meeting
December 6, 2018

HNTB Project #
61512

Location
CDOT – 2nd Floor
30 N. LaSalle

Purpose of Meeting
MOPD/CDOT APS Meeting

Time
10:00 am– 12:00 pm

Meeting Agenda

1) Introductions
2) List of Potential APS Locations
    a) Environment
3) Criteria for prioritizing
    a) Location classifications
        - Easy/Medium/Hard
    b) Prioritization Worksheets
    c) Summary score matrix
4) Map of prioritized locations
5) Prioritized routes
6) Questions and comments

Handouts for meeting

- *Overall list of potential APS locations*
- *Prioritization tool worksheet*
- *Overall summary matrix with scores*
- *Summary matrix by environment*
- *Map of prioritized locations/routes*

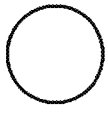
City of Chicago
Department of Transportation

Prioritization Tool for
Installation of Accessible Pedestrian Signals
Cover Sheet

Location:
Evaluator:
Evaluation Date:

Evaluation Summary Enter Crosswalk Score or N/A
Crosswalk A Total Score:
Crosswalk B Total Score:
Crosswalk C Total Score:
Crosswalk D Total Score:
Crosswalk E Total Score:
Crosswalk F Total Score:
Crosswalk G Total Score:
Crosswalk H Total Score:

For each crosswalk, the total score is the Intersection score added to the score from the individual crosswalk worksheet.

Sketch of Intersection: Label crosswalks as A, B, C, D, etc.
 North

Prioritization Tool for Installation of Accessible Pedestrian Signals

Directions and Definitions

Basic Intersection Considerations:

- Is the intersection currently signalized?
- Are the signals susceptible to retrofitting?
- Is the location suitable for audible signals?

Directions to Evaluator:

- Score intersection prior to scoring individual crosswalks. Crosswalk score is dependent on intersection score (total crosswalk score = crosswalk score + intersection score).
- Circle or mark the values that best describe the circumstances at each intersection/crosswalk. The total score is arrived by cumulating each of the chosen values.
- * Refer to the following definitions for clarification on the variables being evaluated.

Key Definitions:

Intersection Signalization Features (definitions per the *Manual on Uniform Traffic Control Devices*)

Pre-timed - A type of traffic control signal operation in which none of the signal phases function on the basis of actuation.

Actuated (semi or fully) - A type of traffic control signal operation in which some or all of signal phases are based on the basis of operation.

Pedestrian phase - The cycle of pedestrian timing consisting of three parts: (1) the walk interval (WALK sign); (2) the pedestrian clearance interval (flashing DON'T WALK); (3) the pedestrian change interval (steady DON'T WALK).

Signal phase - The right-of-way, yellow, change, and red clearance intervals in a cycle that are assigned to an independent traffic movement or combination of movements.

Programs for the Blind & Visually Impaired

The following are facilities in Chicago that serve the blind and visually impaired. Refer to this list when scoring intersections for APS (the closer the facility, the more points assigned).

Access Living
115 W. Chicago Ave.
Chicago, IL 60610
(312) 640-2100

American Foundation for the Blind
401 N. Michigan Ave., #308
Chicago, IL 60611
Email: Chicago@afb.org

Blind Services Association
17 N. State St.
Chicago, IL 60602
(312) 326-0808

Second Sense180 N. Michigan Ave., Suite 1700
Chicago, IL 60601
(312) 236-8569

National Center for Latinos with Disabilities
1921 S. Blue Island
Chicago, IL 60608
(312) 666-3393

National Federation for the Blind of Illinois, Chicago Ch.
6919 W. Berwyn
Chicago, IL 60656

Illinois Society for the Prevention of Blindness
211 W. Wacker Drive, Suite 1700
Chicago, IL 60606
(800) 331-2020

The Chicago Lighthouse
1850 West Roosevelt Rd.
Chicago, IL 60608
(312) 666-1331

Add Equip for Equality
30 N. Michigan Avenue, Suite 300
Chicago, Illinois 60602
(312) 341-0022

Prioritization Tool for Installation of Accessible Pedestrian Signals

Directions and Definitions (continued)

City Public Facilities

The following are examples of public facilities in Chicago that should be accessible by all pedestrians. Refer to this list when scoring intersections for APS (the closer the facility, the more points assigned).

- City hospitals or clinics
- City parks and recreational centers
- Branch libraries
- Civic buildings (such as City Hall,Thompson Center)

The Mayor's Office for People with Disability is responsible for providing a complete list of sites that meet this definition.

Other Major Pedestrian Attractions

The following are examples of pedestrian attractions in Chicago that will likely generate a higher volume of pedestrians. With high volume of pedestrians, there exists an increased chance of pedestrians with visual impairment that may benefit from APS. Refer to this list when scoring intersections for APS (the closer the facility, the more points assigned).

- Major shopping areas
- Major cultural venues
- Educational campuses
- State or Federal recreation areas
- Medical facilities
- Senior centers.

This list is not definitive and other similar attractions may be considered when scoring an intersection.

* Refer to National Cooperative Highway Research Program (NCHRP) Project 3-62: *Guidelines for Accessible Pedestrian Signals 2006.* This prioritization tool for the City of Chicago is modeled from the original tool created for the NCHRP. These guidelines identify the purposes of the prioritization tool and describe in detail each of the variables of the intersection and/or crosswalk.

Prioritization Tool for Installation of Accessible Pedestrian Signals

Intersection Worksheet		
Location:		
	Points (circle all that apply)	**Comments (From Engineer and/or Mobility Instructor)**
Configuration (circle one)		
4-leg	0	
4-leg offset	3	
3-leg (T or Y)	3	
5 or more legs	12	
Mid-block location	14	
Signalization (circle one)		
Pre-timed	0	
Actuated (semi or fully)	2	
Split Phasing	6	
Exclusive pedestrian phase	8	
Transit Facilities within a block (1/8 mile) of the intersection – all legs (circle one)		
No transit facilities	0	
Single bus route	1	
Multiple bus routes	3	
Transit mall/rail station	5	
Distance to Program for Visually Impaired (circle one)		
> 1300 ft.	0	
< 1300 ft. (approx. 4 blocks)	6	
< 650 ft. (approx. 2 blocks)	8	
< 300 ft. (approx. 1 block)	10	
Distance to City Public Programs (circle one)		
> 1300 ft.	0	
< 1300 ft. (approx. 4 blocks)	6	
< 650 ft. (approx. 2 blocks)	8	
< 300 ft. (approx. 1 block)	10	
Distance to Other Major Pedestrian Attraction (circle one)		
> 1300 ft.	0	
< 1300 ft. (approx. 4 blocks)	3	
< 650 ft. (approx. 2 blocks)	4	
< 300 ft. (approx. 1 block)	5	
Intersection Worksheet Score		

Prioritization Tool for Installation of Accessible Pedestrian Signals

Crosswalk Worksheet (Complete one worksheet for each crosswalk)			
Location of Crosswalk:			
Crosswalk Length (circle one)		**Speed Limit (circle one)**	
< 40 ft.	0	< 20 mph	0
40-59 ft.	1	25 mph	1
60-79 ft.	2	30 mph	2
80-99 ft.	3	35 mph	3
100-119 ft.	4	40 mph	4
> = 120 ft.	5	> = 45 mph	5
Approach/Crosswalk Geometrics (circle all that apply)			
Skewed crosswalk			7
Curb radius > 25 ft. (either corner)			1
Apex (diagonal) curb ramp (either ramp)			2
Channelized right turn island			2
Islands or medians (painted, raised or cut-through)			1
Transverse (cross) slope on crosswalk			1
Pedestrian Signal Control (circle all that apply)			
Timed for crossing to median island			8
Push button actuation required for WALK signal			8
Leading Pedestrian Interval (LPI) with parallel street green			8
Non-concurrent WALK interval			4
Vehicle Signal Control (circle all that apply)			
Protected right turn phase/right turn overlap (on parallel street)			7
Leading protected left-turn phase (on parallel street)			3
Right-turn-on-red permitted (on parallel street)			2
Channelized right turn lane under signal control			8
Off-Peak Traffic Presence – at least 2 vehicles present on parallel street (circle one)			
Constant (> 90% of cycles)			1
Heavy (70-80% of cycles)			2
Moderate (50-60% of cycles)			3
Light (30-40% of cycles)			4
Occasional (< 30% of cycles)			5
None (i.e., no through lanes present to create surge noise – e.g., stem of T-intersection)			6

Prioritization Tool for Installation of Accessible Pedestrian Signals

Crosswalk Worksheet (Continued) (Complete one worksheet for each crosswalk)	
Location of Crosswalk:	
Pedestrian pushbutton location – either corner (circle all that apply)	
Located > 10 ft. from curb	3
Located > 5 ft. from curb	3
Requests for APS (circle one)	
No requests	0
1 or more individual requests	6
Distance to Alternative APS Crosswalk	
< 300 ft.	0
< 650 ft.	2
< 1300 ft. change to >= 650 ft.	4
< 2600 ft.	0
>= 2600 ft.	0
Comments from Mobility Instructor (apply point value of 0-5)	
Other Crosswalk Issues (apply point value of 0-5)	
A. Crosswalk Worksheet Score	
B. Intersection Worksheet Score	
C. Total Crosswalk Score (= A + B)	

Prioritization Tool for Installation of Accessible Pedestrian Signals

Intersection Worksheet

Location:

Evaluator:

Date:

Comments (From Engineer and/or Mobility Instructor)

Configuration (check one)		
4-leg	0	
4-leg offset	3	
3-leg (T or Y)	3	
5 or more legs	12	
Mid-block location	14	
Signalization (check one)		
Pre-timed	0	
Actuated (semi or fully)	2	
Split Phasing	6	
Exclusive pedestrian phase	8	
Transit Facilities within a block (1/8 mile) of the intersection – all legs (check one)		
No transit facilities	0	
Single bus route	1	
Multiple bus routes	3	
Transit mall/rail station	5	
Distance to Program for Visually Impaired (check one)		
> 1300 ft.	0	
< 1300 ft. (approx. 4 blocks)	6	
< 650 ft. (approx. 2 blocks)	8	
< 300 ft. (approx. 1 block)	10	
Distance to City Public Programs (check one)		
> 1300 ft.	0	
< 1300 ft. (approx. 4 blocks)	6	
< 650 ft. (approx. 2 blocks)	8	
< 300 ft. (approx. 1 block)	10	
Distance to Other Major Pedestrian Attraction (check one)		
> 1300 ft.	0	
< 1300 ft. (approx. 4 blocks)	3	
< 650 ft. (approx. 2 blocks)	4	
< 300 ft. (approx. 1 block)	5	

Geometric Factors

Crossing Distance>75	+1 (per crossing)	Total =
Crossing Distance>100	+2 (per crossing)	Total =

Crosswalk Skews

The direction of travel from a sidewalk is different from the direction of travel on the opposing sidewalk; The sidewalk ramp aligns the direction of travel towards traffic rather than the sidewalk.

+2 for each skewed crosswalk	Total =

Turning movements

Turning movements that restricts or change the walk interval for a given direction. Note the movement

+1 for each conflicting turn	Total =

Note:

Comments on Further Consideration

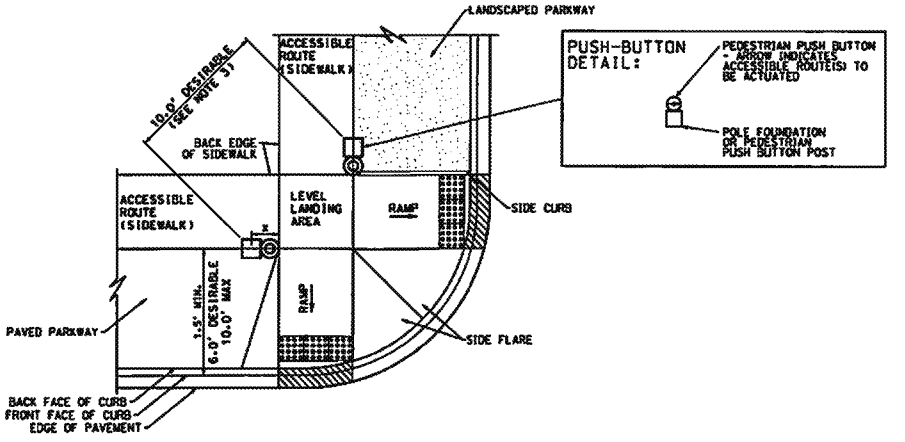
Intersection Worksheet Score		**Comments Score**		**Total Score**	

Site Classification Per Complexity

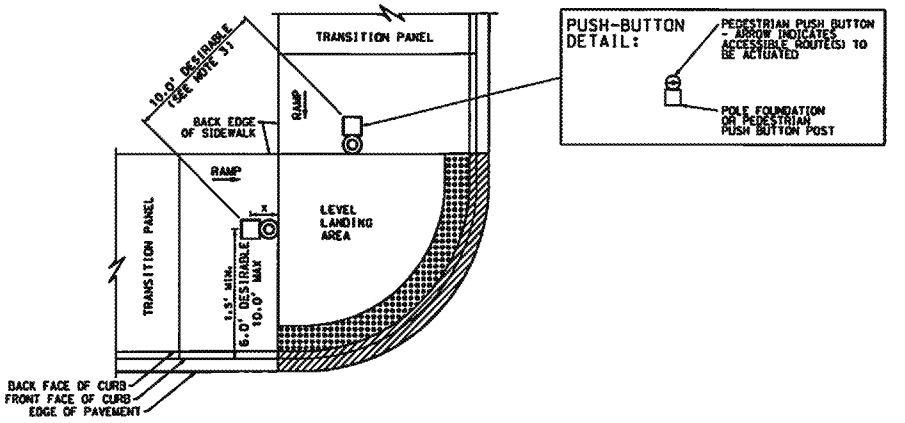
- Category 1 (Easy): APS equipment is to be installed on existing poles or new push button posts. Existing ADA ramps are compliant and geometric modifications are not anticipated except for the potential realignment of existing crosswalks to utilize existing poles rather than installing a push button post. Roadway/sidewalk modifications are to be shown on the APS installation plan. Assume 3 sheets per intersection (APS, signing/marking, and cable/conduit).

- Category 2 (Medium): APS equipment is to be installed on existing poles or new push button posts. Existing ADA ramps are not compliant, geometric changes are anticipated to be minimal, the signal controller/cabinet need to be replaced, or traffic signal timing schedules need to be adjusted. Sidewalk improvements for ADA compatibility are to be proposed with a sketch. Assume 4/5 sheets per intersection (APS, signing/marking, roadway/sidewalk layout, cable/conduit, and traffic signal timing schedule).

- Category 3 (Hard): APS equipment is to be installed on existing poles or new push button posts. Existing ADA ramps are not compliant and locations have vertical/horizontal challenges, geometric deficiencies, ambient noise challenges such as CTA viaducts, structural challenges such as on structure or vaulted walks, or major utility conflicts. Full survey and detail ADA design plans are required. Assume 4/5 sheets per intersection (APS, signing/marking, roadway/sidewalk design modifications, cable/conduit, and traffic signal timing schedule)



TWO PERPENDICULAR RAMPS IN A CORNER



BLENDED TRANSITION RAMP IN CORNER

LEGEND

x ≤ 5 FEET

● POLE FOUNDATION OR PEDESTRIAN PUSH BUTTON POST

◎ ACCESSIBLE PEDESTRIAN PUSH BUTTON

NOTES

1. REFER TO CDOT'S ADA STANDARDS FOR COMPLETE SIDEWALK RAMP DESIGN
2. THE PUSH BUTTON MUST BE MOUNTED ON THE SIDE POLE OR POST PARALLEL TO THE CROSSWALK TO BE ACTUATED FOR WALKING.
3. IF TWO ACCESSIBLE PEDESTRIAN PUSHBUTTONS ARE PLACED LESS THAN 10 FEET APART OR ON THE SAME POLE, EACH ACCESSIBLE PEDESTRIAN PUSHBUTTON SHALL BE PROVIDED WITH THE FOLLOWING FEATURES:
   A. PUSHBUTTON LOCATOR TONE
   B. A TACTILE ARROW
   C. A SPEECH WALK MESSAGE FOR THE WALKING PERSON(SYMBOLIZING WALK) INDICATION
   D. A SPEECH PUSHBUTTON INFORMATION SYSTEM
4. ACCESSIBLE PEDESTRIAN SIGNALS SHALL HAVE BOTH AUDIBLE AND VIBROTACTILE WALK INDICATIONS.
5. VIBROTACTILE WALK INDICATIONS SHALL BE PROVIDED BY A TACTILE ARROW ON THE PUSHBUTTON THAT VIBRATES DURING THE WALK INTERVAL.
6. WHERE TWO ACCESSIBLE PEDESTRIAN SIGNALS ARE SEPARATED BY A DISTANCE OF AT LEAST 10 FEET, THE AUDIBLE WALK INDICATION SHALL BE A PERCUSSIVE TONE. WHERE TWO ACCESSIBLE PEDESTRIAN SIGNALS ON ONE CORNER ARE NOT SEPARATED BY A DISTANCE OF AT LEAST 10 FEET, THE AUDIBLE WALK INDICATION SHALL BE A SPEECH WALK MESSAGE.

SHEET NO. | SHEET TITLE | DRAWN BY | CHECKED BY | DATE | SCALE | PROJECT NO.

REVISIONS:

MARK	DATE	DESCRIPTION

CDOT
CHICAGO DEPARTMENT OF TRANSPORTATION

CONSULTANTS:

HNTB
HNTB CORPORATION
ONE SOUTH WACKER DRIVE, SUITE 900
CHICAGO, IL 60606